HEAP
102

MARK BITS SET
104

FIG. 1A

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
Attorney Docket No.: 42P18503
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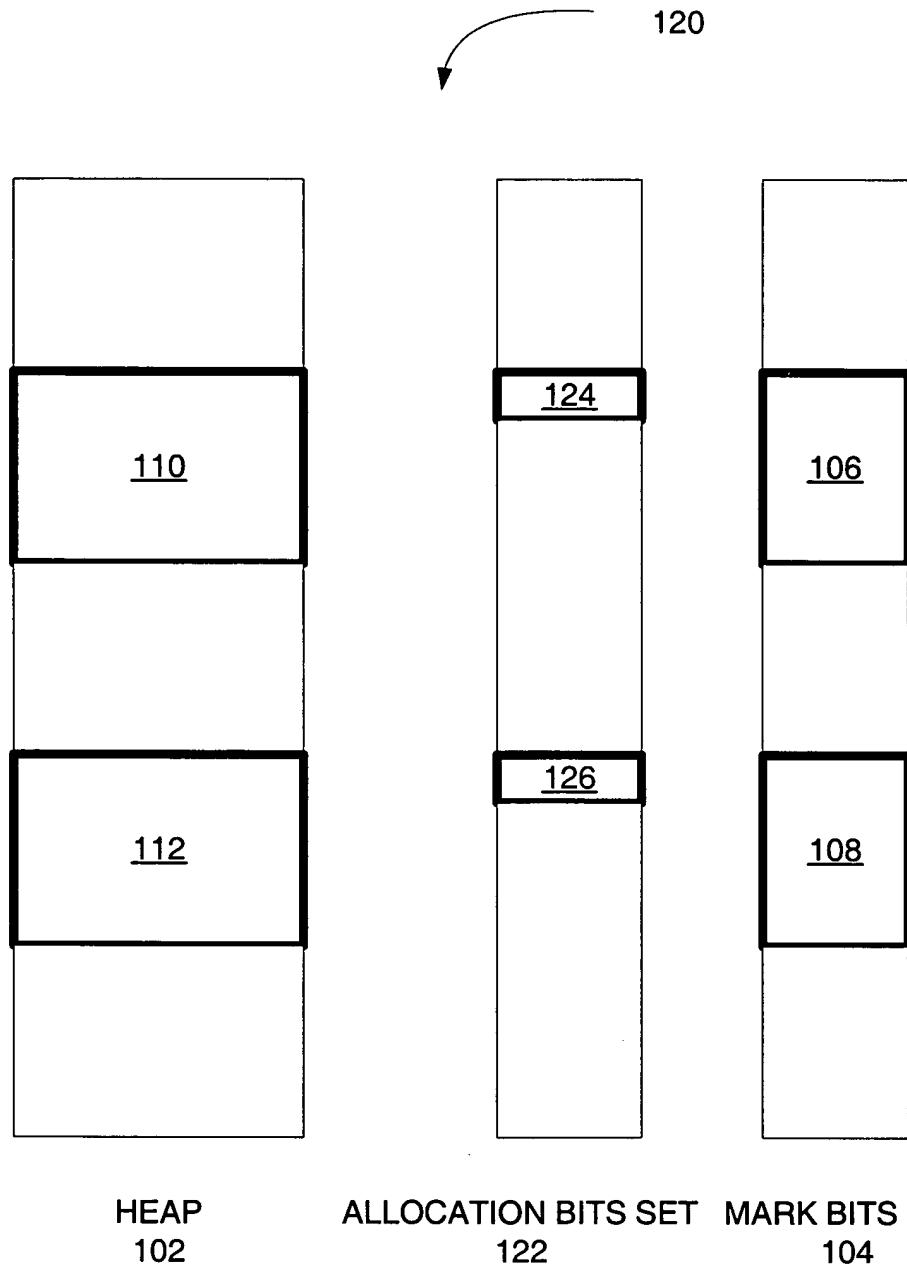
120

110

112

124

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HEAP
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ALLOCATION BITS SET
122

MARK BITS SET
104

**FIG. 1B**

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
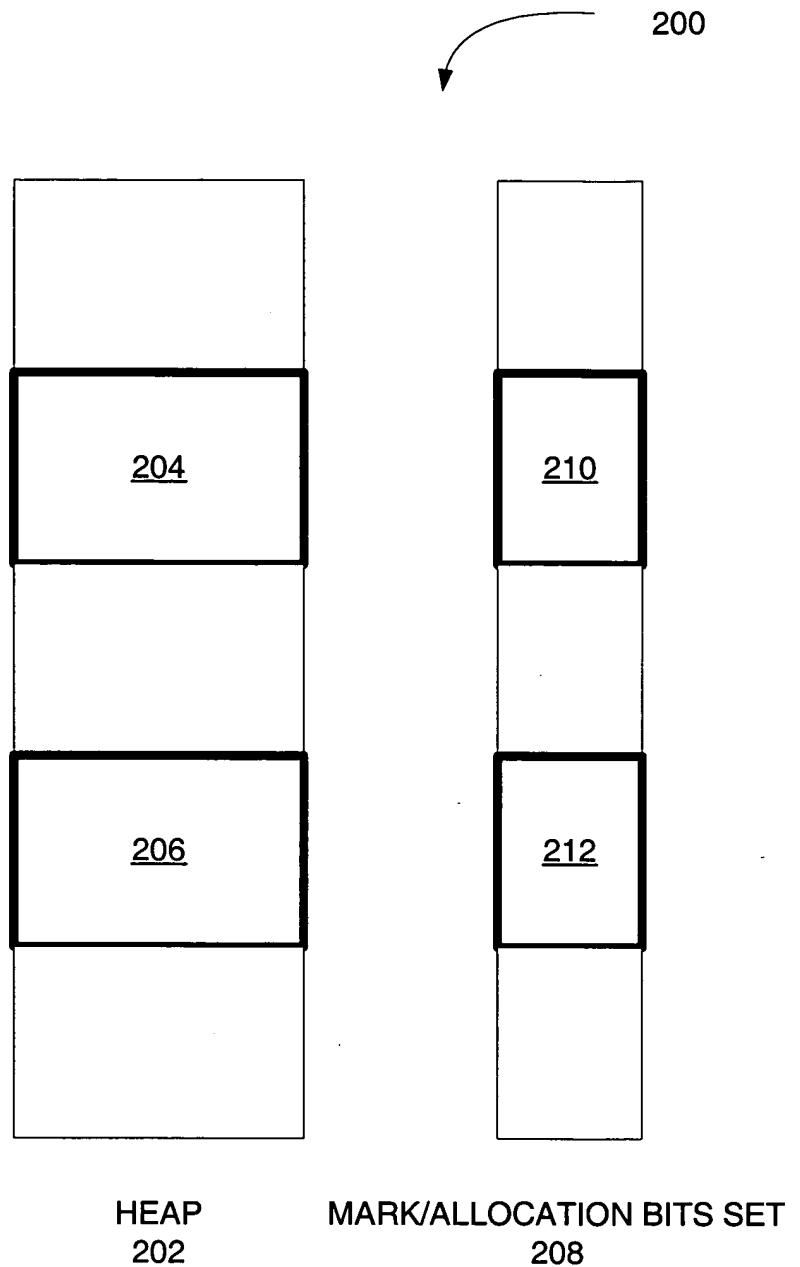Attorney Docket No.: 42P18503
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HEAP
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MARK/ALLOCATION BITS SET
208
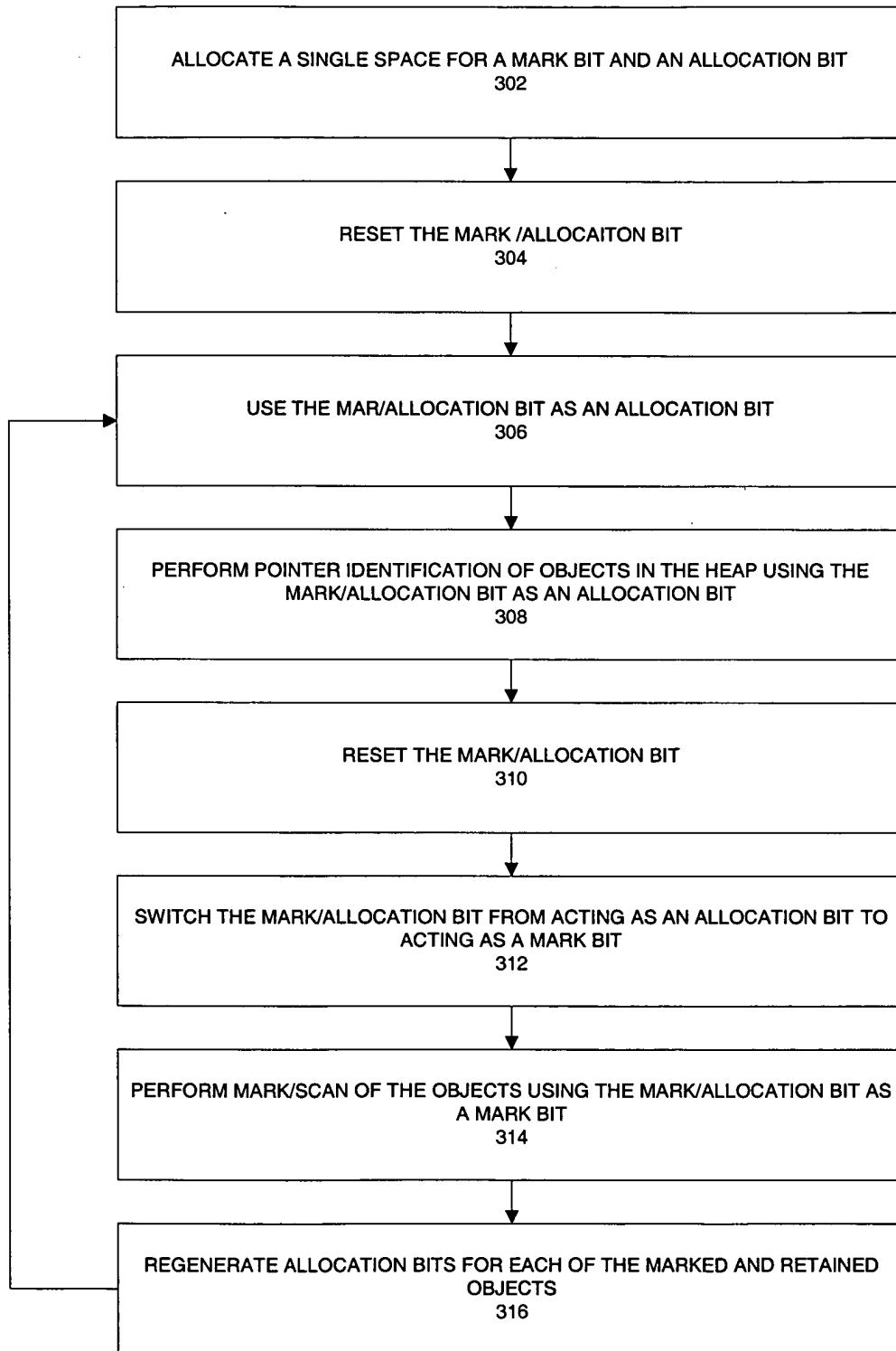
FIG. 2

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
Attorney Docket No.: 42P18503
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ALLOCATE A SINGLE SPACE FOR A MARK BIT AND AN ALLOCATION BIT
302

RESET THE MARK /ALLOCAITON BIT
304

USE THE MAR/ALLOCATION BIT AS AN ALLOCATION BIT
306

PERFORM POINTER IDENTIFICATION OF OBJECTS IN THE HEAP USING THE
MARK/ALLOCATION BIT AS AN ALLOCATION BIT
308

RESET THE MARK/ALLOCATION BIT
310

SWITCH THE MARK/ALLOCATION BIT FROM ACTING AS AN ALLOCATION BIT TO
ACTING AS A MARK BIT
312

PERFORM MARK/SCAN OF THE OBJECTS USING THE MARK/ALLOCATION BIT AS
A MARK BIT
314

REGENERATE ALLOCATION BITS FOR EACH OF THE MARKED AND RETAINED
OBJECTS
316

FIG. 3

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
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| 402 |
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HEAP
420

MARK/ALLOCATION BITS SET
410

FIG. 4

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
Attorney Docket No.: 42P18503
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EXCLUDE SEGMENTS THAT CANNOT BE SELECTED
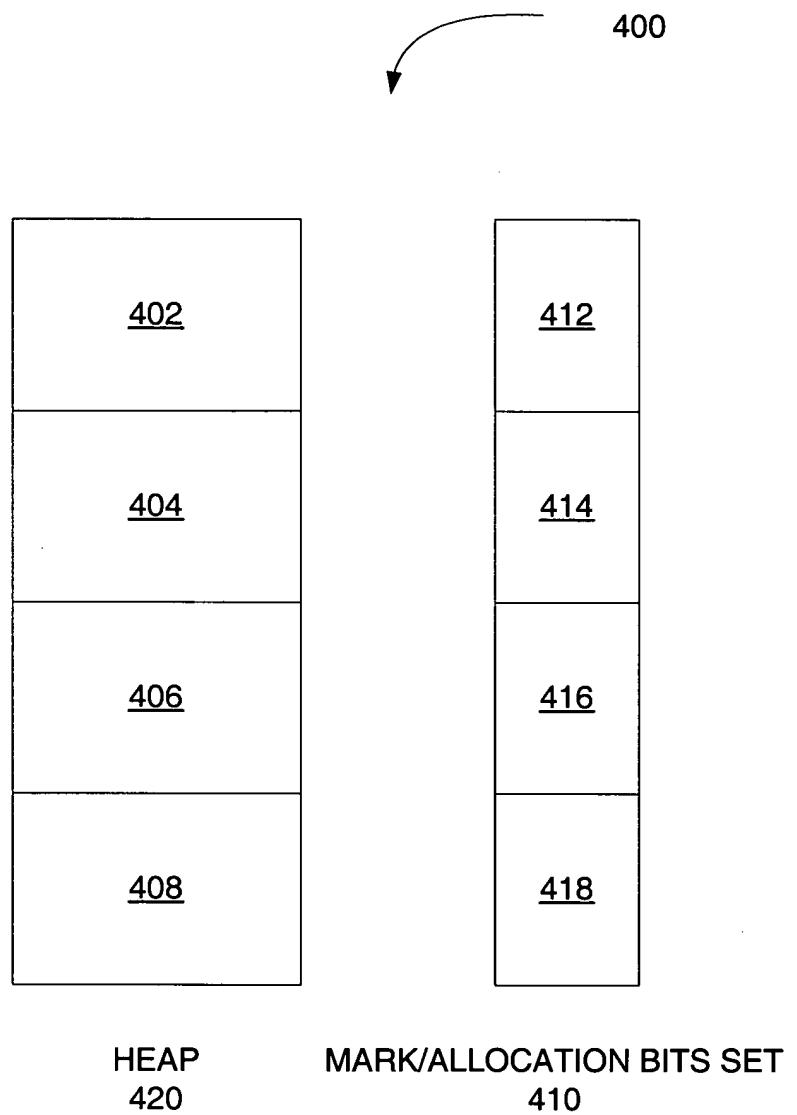502

LOCATE AND SELECT THE SEGMENT THAT IS BEING POINTED
504

ALLOCATION BITS GENERATED FOR THE SELECTED SEGMENT?
506

NO

GENERATE THE ALLOCAITON BITS FOR THE SELECTED SEGMENT
508

YES

CALIBRATE THE POINTER TO THE STARTING ADDRESS OF THE OBJECT
512

NO

IS THE POINTER POINTING TO THE STARTING ADDRESS OF AN OBJECT IN THE SEGEMENT?
510

YES

ADD THE OBJECT TO THE ROOT SET
514

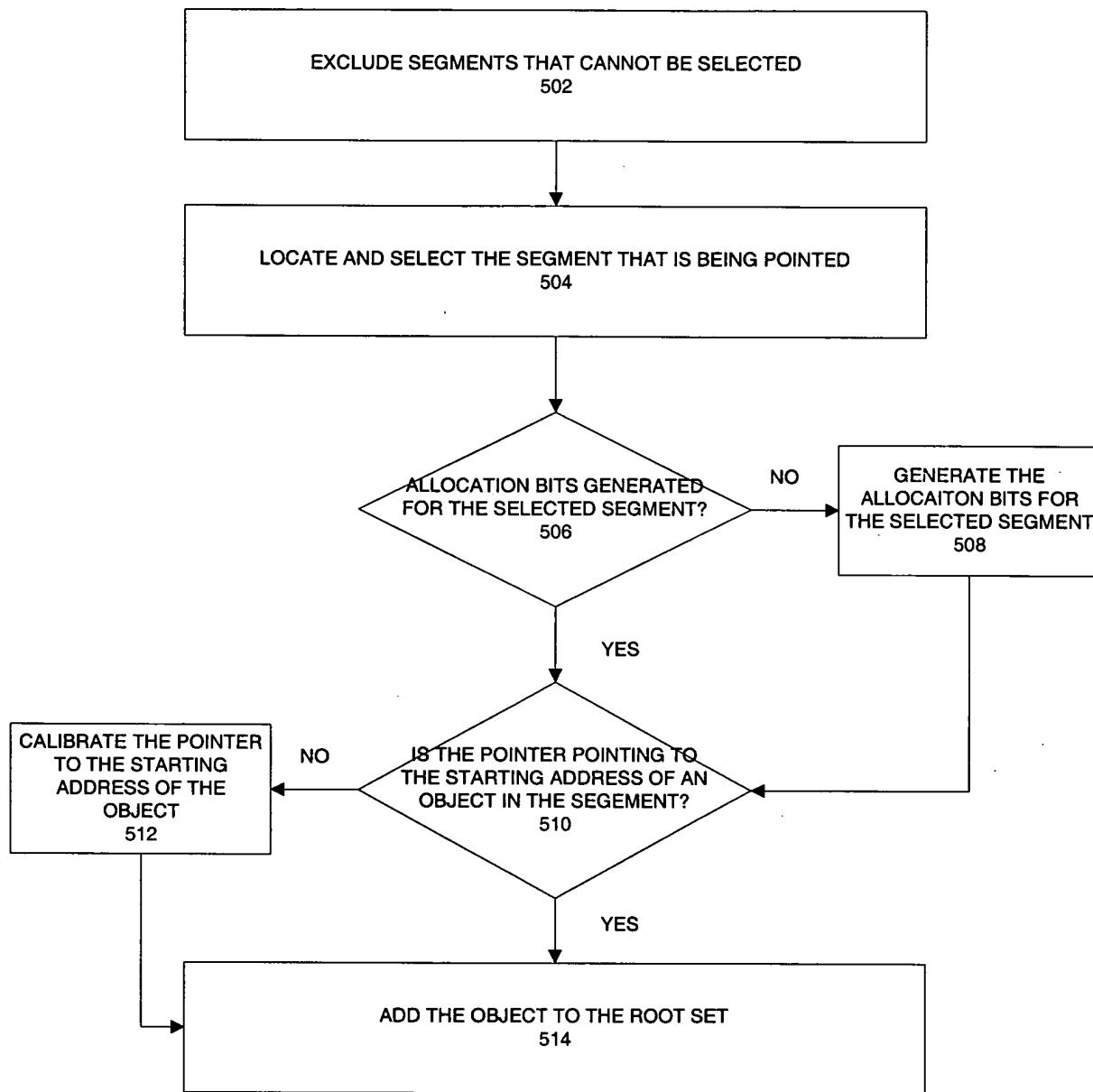FIG. 5

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
Attorney Docket No.: 42P18503
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RESET MARK/ALLOCATION BITS
602

PERFORM LAZY AND SELECTIVE ALLOCATION BITS GENERATION IN ROOT
SET ENUMERATION
604

RESET THE MARK/ALLOCATION BITS AND SWITCH TO USE THEM AS MARK
BITS
606

PERFORM MARK/SCAN OF THE CORRESPONDING OBJECTS IN THE HEAP
608
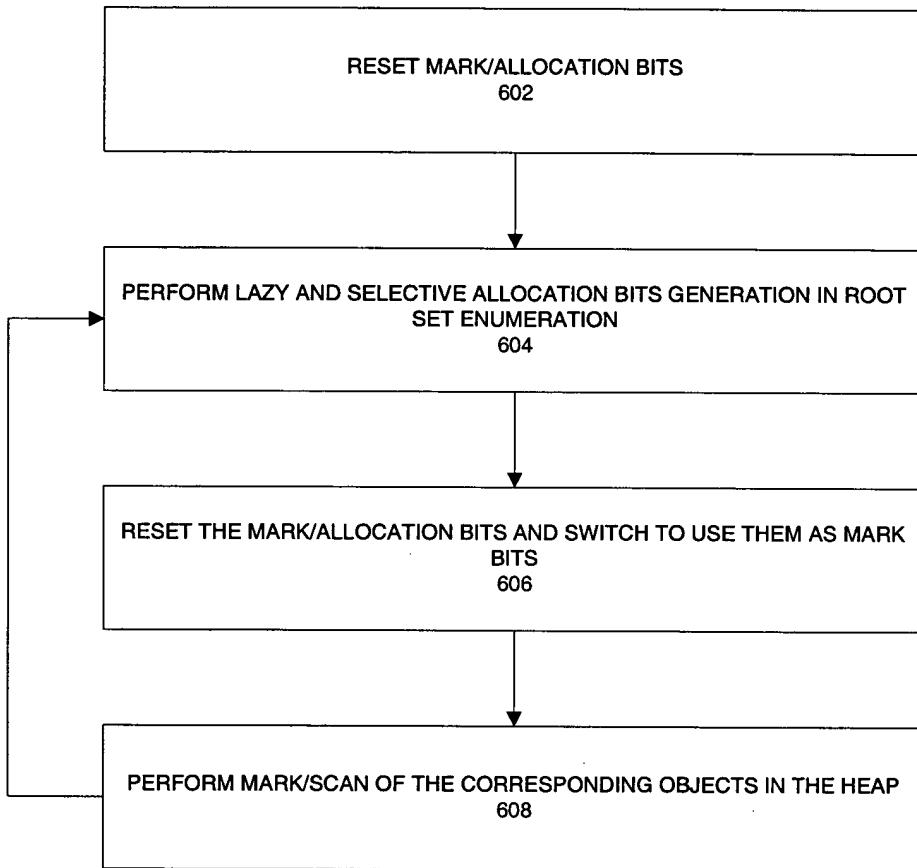
FIG. 6

Title: Integration of Mark Bits and Allocation Bits
Inventors: Wu, et al.
Attorney Docket No.: 42P18503
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## FIG. 7



Processor 1 702

Processor 2 704

Processor 3 706

732

Control

Address

734

Data

736

Processor Bus

712

System Interface 714

Bus Controller 722

Main Memory 716

Memory Controller 718

I/O Interface 720

I/O Bridge 724

I/O Bus

726

I/O Device 730

I/O Controller 728

700 COMPUTER SYSTEM